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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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COUNTRY	Poland	REPORT	
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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

a report describing the physical appearance, the purpose and application, and the component parts of the transfer function analysers reportedly in operation at Polish electrical research institutes.

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COUNTRY: Poland

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AIR POUCH

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July 31, 1959

**KICOM: Possible Diversion of Strategic Goods to Poland; Report by Polish  
Electrical Engineer**

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**Physical Appearance**

The transfer function analyzer consists of four separate units and a special oscilloscope which is an optional extra item. Each of the basic units is roughly three feet long, 18 inches high, and 18 inches wide and is housed in a gray metal case. The units are heavy and are not readily portable by hand.

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**Purpose and Application**

A transfer function analyzer is a device for testing the stability and the quality of regulation of a feedback closed-loop electrical control system.

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Feedback closed-loop systems include (but are not limited to) such well-known remote control devices as selsyn motors and servomechanisms. They have innumerable military and industrial applications.

**Description of Component Parts**

The four units making up the basic transfer function analyzer set are (1) the signal generator (2) the phase-sensitive voltmeter (3) the amplifier-modulator-demodulator and (4)

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The signal generator is designed to produce a wide range of variable test

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frequencies at constant voltage. Either square or sinusoidal waves of from .01 cps to 5,000 cps are reportedly obtainable. [redacted] the sinusoidal output is remarkably free from the distortions commonly found in other signal generators [redacted]

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The phase-sensitive voltmeter is designed to measure, by the balometric method, the root mean square of the distorted, non-linear output which is characteristic of certain components of feedback closed-loop systems. The phase-sensitive feature of the voltmeter is necessary to allow for the time-lag or phase difference between the input and output of such components.

The purpose of the amplifier-modulator-demodulator is, first, to segment the generator signal to the strength required for test applications, and, second, to discriminate between the various frequencies encountered within the feedback closed-loop system.

The fourth component, which is arbitrarily designated as the converter for the purpose of this report, is a device for converting non-electrical values (such as speed or torque) into electrical units (volts) in conjunction with the phase-sensitive voltmeter described above.

Within the special oscilloscope designed for optional use with the transfer function analyzer is a cathode-ray tube capable of retaining images for an unusual length of time. This feature permits the tracing of a linear image by a spot moving slowly at low frequencies. Were an ordinary oscilloscope to be used, such an image could only be created by means of a time-exposure photograph.

#### Non-Availability of Comparable Equipment in Poland

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[redacted] although there is nothing to prevent individual scientists in other countries from constructing similar test equipment of their own design if they cared to take the trouble.

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[redacted] the Soviets are allegedly unable or unwilling to export this equipment to Poland. [redacted]

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